



Our Reference: PAR-115-C

PATENT

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8/28/03  
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1/63

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Allan McCarty  
Serial Number: 09/649,473  
Filing Date: August 28, 2000  
Examiner/Art Group Unit: Graham, Mark S./3711  
Title: BILLIARD CUE

APPEAL BRIEF

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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Sir:

Please enter the following Appeal Brief in the appeal filed June 19, 2003.

REAL PARTY IN INTEREST

The Lorraine C. McCarty trust, by assignment from the inventors, Allan McCarty and Steve Titus, is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related Appeals and Interferences.

STATUS OF CLAIMS

Claims 1, 5, 6 and 8-13 are pending. No claim has been allowed. This Appeal is from the final rejection of claims 1, 5, 6 and 8-13.

STATUS OF AMENDMENTS

An Amendment was not filed to the "final Office Action" dated April 15, 2003.

SUMMARY OF THE INVENTION

The present invention is a billiard cue 10 (page 6, line 20, Figs 1-4B) which significantly reduces cue ball deflection by significantly reducing the mass and/or weight of a tip end 20 of a shaft 12 (page 6, line 22, Fig. 1) while maintaining the shaft stiffness substantially equal to or greater than the stiffness of a comparable shaft formed of solid maple.

In one aspect, the billiard cue 10 includes a shaft 12 having an outer surface and first and second ends 20 and 22 (page 6, lines 25 and 26, Fig. 1). A hollow bore 24 (page 6, lines 27 and 28, Figs. 2A, 2B and 2C) extends from the first end 20 for a predetermined distance along the length of the shaft 12 toward the second end 22. The hollow bore 24 at the tip end 20 of the shaft 12 (page 8, lines 3-7, Figs. 2A and 2B) can either be void of material or filled with a light weight, non-structural material having a weight less than the weight of the shaft 12 surrounding the tip end 20. Vibration and sound dampening materials, such as foam, cotton, etc., can be placed within the bore 24 without significantly detracting from the weight reducing features provided by the hollow tip end bore 24 of the present invention.

The shaft 12 can be formed of a conventional wood, such as a hard wood, and more specifically, maple (page 8, lines 23-24).

The hollow bore 24 is formed as an isolated bore only at the tip end 20 of the shaft 12. In one aspect, the hollow bore 24 extends about 4 to about 5 inches from the tip end 20 of the shaft 12. In another aspect, the bore extends for up to at least ten to twelve inches from the tip end 20 of the shaft 12.

The billiard cue 10 of the present invention is constructed to provide a significantly reduced mass or weight at the tip end 20 of the shaft 12; while maintaining the stiffness of the shaft 12 substantially equal to or greater than a conventional solid shaft made of hard maple. The reduced mass is achieved by forming a hollow bore 24 in the shaft 12 extending for a predetermined distance from the first end 20 of the shaft 12 thereby reducing the material weight at the first end of the shaft. 12 This lower mass at the tip end 20 of the shaft 12 and the high stiffness of the shaft material reduces flexure or buckling of the tip end 20 of the cue shaft 12 when the shaft 12 impacts on a ball thereby significantly reducing the deflection of the struck ball from its intended path of movement generally parallel to the stroke axis of the cue shaft 12. However, the unique combination of stiffness and lightweight characteristics maintain the cue tip 18 on the ball while allowing deflection of the tip 18 as the ball begins to rotate.

#### ISSUES ON APPEAL

The separate issues presented for review in this appeal are:

1. Whether claims 1 and 11 are unpatentable under 35 U.S.C. § 102(b) by Ghezzi;
2. Whether claims 1 and 10-13 are unpatentable under 35 U.S.C. § 102(b) by Seeman et al;
3. Whether claim 13 is unpatentable under 35 U.S.C. § 102(b) by Lo;
4. Whether claims 12 and 13 are unpatentable under 35 U.S.C. § 103(a) over Ghezzi; and
5. Whether claims 5, 6, 8 and 9 are unpatentable under 35 U.S.C. § 103(a) over Ghezzi.

GROUPING OF CLAIMS

The claims do **not** stand or fall together. Claims 1, 6, 9, 10, 11, 12 and 13 are each separately patentable from all other claims. Claims 5 and 8 stand or fall with claim 1.

The specific reasons for the separate patentability of each separately identified claim is set forth in the following Argument section of this Appeal Brief.

ARGUMENT

CLAIM 1

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Ghezzi. However, it is respectfully submitted that Appellant's invention as set forth in Claim 1 includes features which are not anticipated by Ghezzi. Appellant's bore in the tip end of the shaft extends from an inner surface of the ferrule to an opposite closed end. The bore is defined in claim 1 as being a hollow void bore. Ghezzi clearly places a metal spring in the bore in the tip end of the shaft as part of the means for holding the cue tip on the end of the shaft. This clearly does not meet the requirement of a hollow void bore as set forth by the Appellant in claim 1 and thereby renders the rejection as unsupportable.

Claim 1 is also rejected under 35 U.S.C. §102(b) as being anticipated by Seeman. In basing his rejection on Seeman, the Examiner contends that Seeman discloses all the features of Appellant's invention.

It is respectfully submitted that the Examiner's reasoning and rejection is incorrect. Seeman discloses a billiard cue shaft which is essentially hollow from one end to the other. It is also noted that extrapolating the inward tapering inner surface of the bore from the center of the shaft toward the tip would indicate that the inner surface of the side walls are likely to merge at a point spaced from the tip and/or ferrule used to mount the tip on the tip end of the shaft.

Further, contrary to the Examiner's contention that the Appellant has put no particular limits on the "tip end" of the shaft or the degree of proximity to the "tip end" in the claims, it is respectfully submitted that the tip end of the shaft clearly defines the location of the bore and is distinguishable from that of Seeman wherein the

hollow inner portion of the shaft extends longitudinally in the shaft to at least the center of the length of the shaft. This clearly is not a hollow void bore in the tip end of the shaft for reducing tip end mass as set forth by the Appellant in claim 1.

For this reason, it is respectfully submitted that Appellant's invention as set forth in claim 1 patentably defines over Seeman and is not anticipated thereby.

Claims 5 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ghezzi. Claims 5 and 8 depend from claim 1 and are submitted to patentably define over Ghezzi for the same reasons as set forth above with respect to the patentability of Appellant's invention set forth in claim 1 over Ghezzi which reasons are incorporated herein to define the patentability of Appellant's invention in claims 5 and 8.

**CLAIM 11**

Claim 11 is also rejected under 35 U.S.C. §102(b) as being anticipated by Ghezzi.

The reasons set forth above with respect to the patentability of Appellant's invention in claim 1 are repeated herein for claim 11. The use in Ghezzi of a spring to attach the tip to the end of the shaft clearly negates a hollow void bore as set forth by the Appellant in claim 11.

For this reason, it is respectfully submitted that Appellant's invention as set forth in claim 11 patentably defines over Ghezzi as is not anticipated thereby.

Claim 11 is also rejected under 35 U.S.C. §102(b) as being anticipated by Seeman.

Again, contrary to the Examiner's contention that the Appellant has put no particular limits on the "tip end" of the shaft or the degree of proximity to the "tip end" in the claims, it is respectfully submitted that claim 11 defines the bore as extending from the tip end only through the tip portion of the shaft. This clearly distinguishes Appellant's invention from the bore in Seeman which extends longitudinally to at least a center portion of the length of the shaft.

For this reason, it is respectfully submitted that Appellant's invention as set forth in claim 11 patentably defines over Seeman and is not anticipated thereby.

**CLAIM 10**

Claim 10 is rejected under 35 U.S.C. §102(b) as being anticipated by Seeman. In claim 10, Appellant defines the bore as extending for up to at least ten to twelve inches from the tip end of the shaft. This clearly places a particular limit on the tip end of the shaft and sets forth a degree of proximity of the bore to the tip end contrary to the Examiner's contentions.

Seeman is devoid of a bore extending from about ten to twelve inches from the tip end of the shaft, as the hollow end of the shaft of Seeman extends outward to at least a center of the shaft which could be four to five feet in overall length, it is respectfully submitted that Appellant's invention as set forth in claim 10 likewise patentably defines over Seeman and is not anticipated thereby.

**CLAIM 13**

Claim 13 is rejected under 35 U.S.C. §102(b) as being anticipated by Seeman. Appellant's invention as set forth in claim 13 is submitted to patentably define over Seeman since Seeman is devoid of any teaching or suggestion of a bore at the tip end of the shaft, that is, bore extending from the tip end for a predetermined distance. In Seeman, the bore extends essentially through the entire length of the shaft so as to clearly not define a bore located at the tip end of the shaft. Since the bore in Seeman extends over essentially the entire length of the shaft, the advantages of Appellant's tip end bore in reducing mass at the tip end while at the same time maintaining a high stiffness throughout the remaining length of the shaft cannot be realized by Seeman.

For these reasons, it is respectfully submitted that Appellant's invention as set forth in claim 13 patentably defines over Seeman and is not anticipated thereby

Claim 13 was also rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Ghezzi. It is respectfully submitted that the Examiner's interpretation of Ghezzi is clearly based on the impermissible use of hindsight reconstruction using Appellant's invention in claim 13 as a basis for such reasoning. The Examiner makes an unsupported opinion that it is clear from Ghezzi's drawings that the mass of the spring would have to be considerably less than the mass of the wall surrounding the bore. It is submitted

that there is no basis for this conclusion in Ghezzi. Metal can weigh considerably more than wood, particularly the type of wood and the small diameters involved in cue shafts. Thus, there simply is no basis to support the Examiner's contention that the drawing of Ghezzi makes it clear that the mass of the spring would be considerably less than that of the wall surrounding the bore. Thus, Appellant's invention in Claim 13 patentably defines over Ghezzi and is not anticipated thereby.

Claim 13 is also rejected under 35 U.S.C. §102(b) as being anticipated by Lo.

Lo discloses a shaft having a core made of polyurethane foam in the intermediate portion thereof leaving a space in the front end which receives a solid front connector or ferrule. The solid front end of Lo is submitted in position to correspond to the hollow bore of Appellant's invention. Thus, Lo lacks a hollow bore which is devoid of material having a weight heavier than the material forming the shaft surrounding the bore.

For this reason, it is respectfully submitted that Appellant's invention as set forth in claim 13 patentably defines over Lo and is not anticipated thereby.

Claim 13 is also rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Ghezzi.

In essence, the Examiner's arguments point to making the tip end of the shaft, the same as a solid shaft with the metal spring equal to the weight of the wood removed by the bore. The remaining shaft wall thickness surrounding the bore and the spring appears in Ghezzi to be less than the volume of material displaced by the bore. Thus, it is just as easily deducible from Ghezzi that the introduction of a metal spring in the bore in Ghezzi does not meet Appellant's invention as set forth in claim 13 which defines that the bore is devoid of material having a weight heavier than the material forming the shaft surrounding the bore.

For these reasons, it is respectfully submitted that Appellant's invention as set forth in claim 13 patentably defines over Ghezzi and is not anticipated or rendered obvious thereby.

**CLAIM 12**

Claim 12 is rejected under 35 U.S.C. §102(b) as being anticipated by Seeman. Appellant's invention as set forth in claim 12 is submitted to patentably define over Seeman since Seeman is devoid of any teaching or suggestion of a bore at the tip end of the shaft, that is, bore extending from the tip end for a predetermined distance. In Seeman, the bore extends essentially through the entire length of the shaft and is not confined just to the tip end of the shaft. Since the bore in Seeman extends over essentially the entire length of the shaft, the advantages of Appellant's tip end bore in reducing the mass at the tip end while at the same time maintaining high stiffness throughout the remaining length of the shaft cannot be realized by Seeman.

For these reasons, it is respectfully submitted that Appellant's invention as set forth in claim 12 patentably defines over Seeman and is not anticipated thereby.

Claim 12 was also rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Ghezzi. It is respectfully submitted that the Examiner's interpretation of Ghezzi is clearly based on the impermissible use of hindsight reconstruction using Appellant's invention in claim 12 as a basis for such reasoning. The Examiner makes an unsupported opinion that it is clear from Ghezzi's drawings that the mass of the spring would have to be considerably less than that of the wall surrounding the bore. It is submitted that there is no basis for this conclusion in Ghezzi. Metal can weigh considerably more than wood, particularly the type of wood and the small diameters involved in cue shafts. Thus, there simply is no basis to support the Examiner's contention that the drawing of Ghezzi makes it clear that the mass of the spring would be considerably less than that of the wall surrounding the bore.

The Examiner also states that one of ordinary skill in the art would recognize in fashioning Ghezzi's cue that the mass of the spring should be less than the mass of the wall so as to not unduly weight down the end of the cue, again represents an unsupported opinion. There are no weight considerations taught or evident from Ghezzi. There is also no basis to support the Examiner's contention that



at the very least one of ordinary skill in the art would not want to make the cue heavier by the means by which the tip is attached.

In essence, the Examiner's arguments point to making the tip end of the shaft, with the metal spring at least equal to the weight of the wood removed by the bore. The remaining wall thickness surrounding the bore appears in Ghezzi to be less than the volume of material displaced by the bore. Thus, it is just as easily deducible from Ghezzi that the introduction of a metal spring in the bore in Ghezzi does not meet Appellant's invention as set forth in claim 12 which defines that the bore as including a lightweight, iron structural material. The metal spring disposed by Ghezzi in the bore hardly can be said to be a lightweight iron structural material as defined by the Appellant in claim 12.

For these reasons, it is respectfully submitted that Appellant's invention as set forth in claim 12 patentably defines over Ghezzi and is not anticipated or rendered obvious thereby.

**CLAIMS 6 and 9**

Claims 6 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ghezzi.

The Examiner acknowledges that Ghezzi does not disclose the exact length of his bore though it appears on the order of four to five inches. The Examiner contends that the exact length would obviously have been up to the ordinary skilled artisan depending upon the amount of length that one felt was necessary to properly retain the tip element, just as in Appellant's claim device that the removal of materials from the tip end would lighten that portion of the cue.

However, it is respectfully submitted that any material removed by Ghezzi to form a bore is offset by the introduction of a metal spring. This detracts from any reduction in the mass of the tip end of the cue created by Appellant's use of a unique hollow void tip end bore which extends from about four to about five inches from the tip end of the shaft.

Appellant's hollow void tip end bore uniquely reduces the mass of the tip end of the shaft which reduces the flexure of the tip end of the shaft during a ball strike so as to enable the tip of the cue to remain in contact with the ball without

added deflection as the ball begins to rotate. This results in the ball traveling along a path more closely aligned or parallel with the stroke axis of the cue.

Ghezzi does not appreciate any tip end mass reduction for reducing flexure of the tip end at impact with the cue ball.

Further, it is submitted that there is no basis to assume, as the Examiner does in the Office Action, that the bore in Ghezzi extends from four to five inches from the tip end of the shaft. Ghezzi lacks an illustration of the overall length of the shaft such that the end of the shaft extending from the tip is without any indication of scale. Regardless of its length, which is typically 4 to 5 feet, the bore in Ghezzi is added merely to provide a means for receiving the spring without any length consideration for reducing the mass of the tip end of the shaft.

For these reasons, it is respectfully submitted that Appellant's invention as set forth in claim 6 and 9 patentably defines over Ghezzi and is not rendered obvious thereby.

CONCLUSION

For the reasons stated above, it is respectfully submitted that Appellants' invention as set forth in claims 1, 5, 6 and 8-13 patentably defines over the cited references and is not suggested or rendered obvious thereby. Also for the above listed reasons, it is respectfully submitted that the Examiner's final rejection of claims 1, 5, 6 and 8-13 is erroneously based and its reversal is respectfully requested.

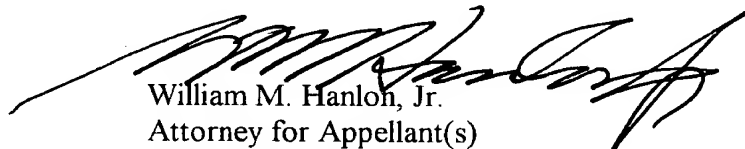
No oral hearing is requested.

Appellants' attorney's check in the amount of \$160.00 is enclosed to cover the Appeal Brief filing fee.

This Appeal Brief is being filed in triplicate including one original and two copies.

Respectfully submitted,

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& HELMHOLDT, P.C.



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Dated: August 19, 2003  
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APPENDIX A

CLAIMS AT ISSUE IN APPEAL

1. A billiard cue comprising:  
a shaft having a wall with an outer surface and a tip end and an opposed end, a hollow, void bore extending from the tip end for at least a predetermined distance along the length of the shaft toward the opposed end and terminating in an end located in proximity with the tip end of the shaft, the bore reducing the mass of the tip end to minimize cue ball deflection on impact with the cue.
5. The billiard cue of claim 1 wherein:  
the shaft is formed of wood.
6. The billiard cue of claim 5 wherein the bore extends to an end located from about 4 to about 5 inches from the tip end of the shaft.
8. The billiard cue of claim 1 wherein the shaft is formed of a material having a modulus of elasticity greater than or equal to  $4.3 \times 10^6$  P.S.I.
9. The billiard cue of claim 1 wherein the bore extends to an end located from about 4 to about 5 inches from the tip end of the shaft.
10. The billiard cue of claim 1 wherein:  
the bore extends for up to at least 10 to 12 inches from the tip end.
11. The billiard cue of claim 1 wherein:  
the shaft has a tip portion extending from the tip end; and  
the bore extending from the tip end only through the tip portion of the shaft.

12. The billiard cue of claim 13 further comprising:  
a lightweight, non-structural material disposed in at least a portion of  
the bore.

13. A billiard cue comprising:  
a shaft having a wall with an outer surface and a tip end and an  
opposed end, a hollow bore extending from the tip end for at least a predetermined  
distance along the length of the shaft toward the opposed end to reduce the mass of  
the tip end to minimize cue ball deflection on impact with the cue, the bore devoid of  
material having a weight heavier than the material forming the shaft surrounding the  
bore.

**APPENDIX B**  
**FINAL REJECTION**

9. The billiard cue of claim 1 wherein the bore extends to an end located from about 4 to about 5 inches from the tip end of the shaft.

10. The billiard cue of claim 1 wherein:  
the bore extends for up to at least 10 to 12 inches from the tip end.

11. The billiard cue of claim 1 wherein:  
the shaft has a tip portion extending from the tip end; and  
the bore extending from the tip end only through the tip portion of the shaft.

Claims 1 and 11 are rejected under 35 U.S.C. §102(b) as being anticipated by Ghezzi. Again, in response to applicant's comments, the portion of Ghezzi's tip fastening means which projects into the void space is the same structure as applicant's element 16 which projects into the void space and thus Ghezzi meets the terms of the claims as applicant has defined them. If Ghezzi's spring has weight which detracts from any use of the hollow bore to minimize tip end mass, then applicant's element 16 has weight which detracts from any use of the hollow bore to minimize tip mass.

Claims 1, 10, 11, 12, and 13 are rejected under 35 U.S.C. §102(b) as being clearly anticipated by Seeman et al. (Seeman).

In response to applicant's arguments over the Seeman rejections, the applicant has put no particular limits on the "tip end" of the shaft or the degree of proximity to the "tip end" in the claims. It remains the Examiner's opinion that Seeman's bore meets the limits of the claims as set forth by the Applicant.

Claim 13 is rejected under 35 U.S.C. §102(b) as being clearly anticipated by Lo. In response to applicant's arguments, note again that the claim terms as defined by the applicant allow for at least some other material in the bore as indicated by the presence of applicant's element 16 in the bore.

Claims 12 and 13 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ghezzi. In the Examiner's opinion it is clear from Ghezzi's drawings that the mass of the spring would have been considerably less than that of the wall surrounding the bore. However, even assuming *arguendo* this is not clear from the drawings, it is at least clear that the ordinarily skilled artisan would recognize in fashioning Ghezzi's cue that the mass of the spring should be less than the mass of the wall so as to not unduly weight down the cue end. At the very least the ordinarily skilled artisan would not want to make the cue heavier in the means by which the tip was attached.

Claims 5, 6, 8 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ghezzi.

Regarding claim 5, cues are commonly made of wood and it would have been obvious to have made Ghezzi's of such material if such were preferred by the user.

Concerning claims 6 and 9 note the comments in the previous action pertaining to Ghezzi and claims 6 and 9. In the Office Action dated July 15, 2002, the Examiner states "See Appendix B post it in file, middle paragraph re claim 6, 9 and 11.

With regard to claim 8, the exact modulus of elasticity of the material of which Ghezzi's cue was made would have been up to the ordinarily skilled artisan depending on the performance characteristics desired in the cue.